

SUBSTITUTE SPECIFICATION

CLAIMS

WHAT IS CLAIMED IS:

IN THE CLAIMS:

Please cancel claims 1-9, without prejudice or disclaimer, and insert new claims 10-29 as follows:

10. (New) A safety switch with an electronic programmable system (2) comprising:

a group of two single-contact relays (9) connected in series, associated with a matching element (6);

a proximity element (10) associated with a support element (8);

magnetic sensors for the check of the contact status of each of the two single-contact relays (9);

two calculation units connected to an output of the magnetic sensors through a respective one of a plurality of control signal connectors (15, 16) and to one input by a common connector (17); and

a magnet (11) associated with the proximity element (10);

wherein the checking of the contact status of the single-contact relays (9) is managed by the calculation units with the checking occurring by sending a fixed number of fixed-frequency pulse width modulation (PWM) pulses to the magnetic sensors of each of a pair of single-contact relays (12, 13) through the connectors (15, 16) and by checking the return of the same pulses through the common connector (17).

11. (New) The safety switch with the electronic programmable system (2) according to claim 10 wherein the magnetic sensors are sensitive to the orientation of the flow lines of the surrounding magnetic field.

12. (New) The safety switch with the electronic programmable system (2) according to claim 10 wherein the magnet (11) generates a magnetic field variation detectable by the magnetic sensors.
13. (New) The safety switch with the electronic programmable system (2) according to claim 12 wherein the magnetic field variation is a function of the distance of the magnet (11) from the magnetic sensors.
14. (New) The safety switch with the electronic programmable system (2) according to claim 10 wherein the PWM pulses are alternatively sent to the magnetic sensor of the two single-contact relays (12, 13).
15. (New) The safety switch with the electronic programmable system (2) according to claim 14 wherein the PWM pulses have frequency of 50 kHz divided into packets of one-second duration for a total of 50 pulses for each audit window.
16. (New) The safety switch with the electronic programmable system (2) according to claim 15 wherein, between the sending of the pulses to the magnetic sensor of a first single-contact relay, a line-engaged delay time remains.

17. (New) The safety switch with the electronic programmable system (2) according to claim 16 wherein a time of a control cycle is divided at 50% on the two single-contact relays.

18. (New) The safety switch with the electronic programmable system (2) according to claim 10 wherein management and control parameters are acquired by a program block executed at the start of the electronic programmable system (2).

19. (New) The safety switch with the electronic programmable system (2) according to claim 11 wherein the magnet (11) generates a magnetic field variation detectable by the magnetic sensors.

20. (New) The safety switch with the electronic programmable system (2) according to claim 19 wherein the magnetic field variation is a function of the distance of the magnet (11) from the magnetic sensors.

21. (New) The safety switch with the electronic programmable system (2) according to claim 19 wherein the PWM pulses are alternatively sent to the magnetic sensor of the two single-contact relays (12, 13).

22. (New) The safety switch with the electronic programmable system (2) according to claim 20 wherein the PWM pulses are alternatively sent to the magnetic sensor of the two single-contact relays (12, 13).

23. (New) The safety switch with the electronic programmable system (2) according to claim 19 wherein the PWM pulses have frequency of 50 kHz divided into packets of one-second duration for a total of 50 pulses for each audit window.

24. (New) The safety switch with the electronic programmable system (2) according to claim 20 wherein the PWM pulses have frequency of 50 kHz divided into packets of one-second duration for a total of 50 pulses for each audit window.

25. (New) The safety switch with the electronic programmable system (2) according to claim 21 wherein the PWM pulses have frequency of 50 kHz divided into packets of one-second duration for a total of 50 pulses for each audit window.

26. (New) The safety switch with the electronic programmable system (2) according to claim 22 wherein the PWM pulses have frequency of 50 kHz divided into packets of one-second duration for a total of 50 pulses for each audit window.

27. (New) The safety switch with the electronic programmable system (2) according to claim 19 wherein, between the sending of the pulses to the magnetic sensor of a first single-contact relay, a line-engaged delay time remains.

28. (New) The safety switch with the electronic programmable system (2)
according to claim 20 wherein, between the sending of the pulses to the magnetic sensor
of a first single-contact relay, a line-engaged delay time remains.

29. (New) The safety switch with the electronic programmable system (2)
according to claim 21 wherein, between the sending of the pulses to the magnetic sensor
of a first single-contact relay, a line-engaged delay time remains.